

ABSTRACT

In one embodiment, the present invention provides an interferometric inspection system for inspecting semiconductor samples. The system includes at least one illumination source for generating an illumination beam and an interferometric microscope module for splitting the illumination beam into a test beam directed to the semiconductor sample and a reference beam directed to a tilted reference mirror. The beams are combined to generate an interference image at an image sensor. The tilted reference mirror is tilted at a non-normal angle with respect to the reference beam that is incident on the mirror to thereby generate fringes in the interference image. The system also includes an image sensor for acquiring the interference image from the interferometric microscope module and generates an interference signal. The system further includes a processing module configured to generate complex field information corresponding to the sample from the interference image signal and an alignment module located in the optical path between the interferometric module and the image sensor. In another embodiment, the processing module is configured to generate complex field information from either spatial fringe analysis or temporal fringe analysis performed on the interference image signal.

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